UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/036,548	12/31/2001	Norm Hendrickson	47653/DMC/V165	4676

				EXAMINER
23363	7590	11/10/2005		PARK, JUNG H

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ART UNIT	PAPER NUMBER
2661	

DATE MAILED: 11/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/036,548	HENDRICKSON ET AL.
	Examiner	Art Unit
	Jung Park	2661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____ .
2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-18* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☒ Claim(s) *10 and 11* is/are allowed.
6) ☒ Claim(s) *1-9 and 12-18* is/are rejected.
7) ☒ Claim(s) *10-11* is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☐ All   b) ☐ Some * c) ☐ None of:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____ .
4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -
(e) the invention was described in a patent granted on an application for patent by another filed in the United States
before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled
the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the
applicant for patent.

2. Claims 12-14, 17, and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by

Carotti et al. (U.S. 6,704,890, "Carotti").

Regarding claims 12 and 13, Carotti discloses, "a method of deskewing parallel data

lines comprising:

- providing parallel data (*data 16 fig.19*) over a plurality of parallel data lines (*16 fig.19*), the

parallel data lines providing parallel data from a first unit (*left side unit fig.19*) to a second unit

(*right side unit fig.19*);

- successively providing sample data (*reference bit streams 62 fig.19 and col. 22, lines 27-32*)

over a sample channel (*1 fig.19*), the sample data corresponding to data of the parallel data

(*col. 9, lines 3-5*), the sample channel providing the sample data from the second unit to the first

unit; and using the sample data to align the parallel data (*skew unit fig.19 is for aligning parallel*

data)."

Regarding claim 17, it is claim corresponding to claim 13 except a spare channel and a

return channel. However, one of the parallel data channels is used as a spare channel (*16*

fig.19) and the return channel (*1 fig.19*) is the reference bit stream channel as described in claim

13. Therefore, this claim is rejected for the similar reasons set forth in the rejection of claim 13.

Regarding claims 14 and 18, Carotti discloses, "the downstream unit includes a sampler

(70 fig. 19; col. 22, lines 47-49) for placing samples of data from a selected parallel data

(incoming data through 16 fig.19) line on the sample channel."

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section
102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the
subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary
skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the
invention was made.

4.   Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto et al.

(U.S. 6,336,192, "Sakamoto") in view of Carotti.

Regarding claim 1, Sakamoto discloses, "a de-skew system comprising:

- a processor (1 fig.2) configured to receive input data and generate parallel data (input and

output data fig. 2);

- de-skew unit (deskew unit 12 fig.4; col. 10, lines 24-25) receiving the generated parallel data

(input data D1:1-n fig.4) and a timing signal (SF:1-n fig.4) and adjusting timing of the generated

parallel data (compensation unit 12 fig.4 is for adjusting timing) based on the timing signal, to

generate a plurality of data signals (compensated output data fig.4)."

Sakamoto fails to teach a control unit disclosed by Carotti.

Carotti discloses, "control unit (61 & 64 fig.19) configured to collect portions of the

plurality of data signals (data 60 fig.19 and col. 22, lines 24-27) and to receive a loop data

sample (reference data through 1 fig.19) and generating the timing signal (data through 16

fig.19) based on a comparison (*63 fig.19*) of the collected portions of the plurality of data signals and the loop data sample (*compare unit 63 fig.19 is for comparing 60 with 62*).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify the de-skew system of Sakamoto by including the function of control unit taught by Carotti since one would be motivated to include the control unit in order to generate compensated data by comparing an input data with a loop data sample.

Regarding claim 2, Sakamoto discloses, "a buffer unit receiving the plurality of data (*not shown in 12 fig.4, but it is required to store input data somewhere in the de-skew system*) and the clock signal (*clocks signals within SF fig.4*) and generating a plurality of data signals (*compensated data fig.4*) based on the received clock signal."

Sakamoto fail to teach a reverse control unit as a down stream unit. However, Carotti discloses, "a reverse control unit (*right side of unit fig.19*) configured to collect portions of the plurality of data signals (*input data through 16 fig.19*) and to generate a loop data sample (*reference bit streams through 1 fig.19*) based on the collected portions of the plurality of data signals."

Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify the de-skew system disclosed by Sakamoto by including the reverse control unit taught by Carotti since one would be motivated to generate a loop data sample in order to provide it to the upstream unit for skew compensation.

Regarding claim 3, Sakamoto is silent on the input drivers for receiving input data. However, this feature is deemed to be inherent to the de-skew system of Sakamoto as shown in the skew compensation apparatus in fig. 4. A device driver is a program routine that links the

operating system to a peripheral device. Written by programmers who understand the peripheral hardware's command language and characteristics, the driver contains the precise machine language necessary to perform the functions requested by the application. For example, routines that perform internal functions, such as memory managers and disk caches, are also drivers. The Sakamoto system would be inoperative if the input drivers and buffers were not in the de-skew apparatus.

5. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carotti in view of Sakamoto.

Regarding claim 15, Carotti teaches the deskew system, but he is silent on the deskew circuitry. However, Sakamoto discloses a deskew circuitry (*20c fig.18*) for each of the parallel data channels.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to include the deskew circuit into the upstream unit of Carotti since one would be motivated to include the deskew circuit. Otherwise, the system of Carotti would be inoperative if there is no a deskew circuit.

Regarding claim 16, Carotti is silent on the upstream unit including control circuitry. However, Sakamoto discloses a control circuitry (*52 fig.18*) providing adjustments to the deskew circuitry the deskew circuitry based on a comparison of portions of the parallel data and data provided over the sample channel.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to include the control circuitry into the upstream unit of Carotti since one

would be motivated to include the control circuitry in order to provide adjustments to the deskew circuit.

6.   Claims 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carotti in view of US 5,854,816 ("Kim").

Regarding claim 4, Capowski discloses a de-skew method comprising:

 - receiving a loop back data sample (*62 fig.19*);

 - determining a delay for data from a specific channel (*col. 22, lines 27-32 offset signal*);

 - delaying data from the specific channel (*col. 22, line 31 adjust time delay*), but does not teach a determining step.

However, Kim discloses the step of determining a data channel specified by the loop back data sample (*col. 4, lines 8-11*).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to include the data channel determining step taught by Kim into the de-skew method disclosed by Capowski since one would be motivated to include the determining step in order to select one data channel related with the loop back data sample.

Regarding claim 5, Capowski discloses, "determining a delay comprises: providing data from the specific channel to a delay element (64 fig.19); and comparing data from the delay element with the data from the loop back data sample (compare unit 63 fig.19 is for comparing 60 with 62)."

Regarding claim 6, Capowski discloses, "delaying the specific channel comprises adjusting the delay time of the delay element when the data from the delay element corresponds to the data from the loop back data sample (col. 22, lines 30-32)."

Regarding claim 7, Capowski is silent on the de-skew method comprising setting the specific channel at a midpoint.

However, at the time of the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to position the channel at a midpoint in order to compare the channel with the sample data.

Regarding claim 8, Capowski discloses, "the de-skew method further comprising selecting another channel to supply data to the delay element (60 fig.19 one of channels)."

Regarding claim 9, it is claim corresponding to the comparing step in claim 5 and is therefore rejected for the similar reasons set forth in the rejection of claim 5.

Allowable Subject Matter

7. Claims 10-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
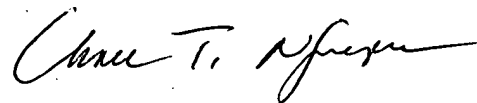
Conclusion

8.   Any inquiry concerning this communication or earlier communications from the examiner

should be directed to Jung Park whose telephone number is 571-272-8565. The examiner can

normally be reached on Mon-Fri during 7:10-4:40.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chau Nguyen can be reached on 571-272-3126. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

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system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private

PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Jung Park
Patent Examiner
Art Unit 2661
October 31, 2005

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